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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/597,840	06/20/2000	Dewen Qiu	19603/3340 (CRF D-2018B)	6516

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EXAMINER	
KUBELIK, ANNE R	

ART UNIT	PAPER NUMBER
1638	

DATE MAILED: 06/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/597,840	QIU ET AL.	
	Examiner	Art Unit	
	Anne R. Kubelik	1638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 January 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *38-44 and 46-51* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *38-44 and 46-51* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 16 January 2004 has been entered.

2. Claims 38-44 and 46-51 are pending.

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. The terminal disclaimer filed on 16 January 2003 disclaiming the terminal portion of any patent granted on this application that would extend beyond the expiration date of 6,174,717 and 6,228,644 has been reviewed and is accepted. The terminal disclaimer has been recorded.

5. In the response filed 16 January 2003, Applicant states that prior art use of one nucleic acid encoding a hypersensitive response elicitor to impart systemic acquired resistance to a plant would render obvious the use of other nucleic acids encoding other hypersensitive response elicitors (response pg 4). In light of this and the petition decision of 10 June 2003, the restriction requirement among the groups is withdrawn and all pending claims are examined.

6. The rejection of claims 38-39, 41 and 49-50 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 15-16 of U.S. Patent No. 6,174,717 is withdrawn in light of the filing of a terminal disclaimer over that patent.

7. The rejection of claims 38-39, 41 and 46-50 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-16 of U.S. Patent No. 6,228,644 is withdrawn in light of the filing of a terminal disclaimer over that patent.

Claim Rejections - 35 USC § 112

8. Claims 38-44 and 46-51 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors), at the time the application was filed, had possession of the claimed invention. The rejection is repeated for the reasons of record as set forth in the Office action mailed 17 December 2002, as applied to claims 38-39, 41 and 46-50. Applicant's arguments filed 16 January 2003 have been fully considered but they are not persuasive.

The claims are broadly drawn to a multitude of nucleic acids that hypersensitive response elicitor proteins. In contrast, the specification only describes a coding sequences from four bacterial species that comprises SEQ ID NO:1, 3, 5 and 7. Applicant does not describe other nucleic acids encompassed by the claims, and the structural features that distinguish all such nucleic acids from other nucleic acids are not provided.

The instant specification fails to describe a representative number of nucleic acids that encode hypersensitive response elicitor proteins from *E. amylovora*. For example, the instant specification fails to teach the HrpW gene (Kim et al, 1998, J. Bacteriol. 180:5203-5210) or the dspE or dspF genes (Bogdanove et al, 2001, US Patent 6:228,644), all of which encode hypersensitive response elicitor proteins.

Hence, Applicant has not, in fact, described nucleic acids that encode hypersensitive response elicitor proteins within the full scope of the claims, and the specification fails to provide an adequate written description of the claimed invention.

Therefore, given the lack of written description in the specification with regard to the structural and physical characteristics of the claimed compositions, it is not clear that Applicant was in possession of the genus claimed at the time this application was filed.

Applicant urges that the specification describes four exemplary nucleic acids encoding hypersensitive response elicitors from four different bacterial plant pathogens and that these species are representative of the claimed genus (response pg 4-5).

This is not found persuasive. In the instant case the claims are drawn to use of a nucleic acid encoding a hypersensitive response elicitor from any *Erwinia, Pseudomonas*, or *Xanthomonas* species. The specification, however, describes only four such nucleic acids.

There are at least 12 *Erwinia* species, including *E. amylovora, E. aphidicola, E. billingiae, E. carotovora, E. chrysantum, E. mallotivora, E. papayae, E. persicina, E. psidii, E. pyrifoliae, E. rhapontici,* and *E. tracheiphila.* The instant specification only describes two nucleic acids encoding hypersensitive response elicitors from two species.

There are at least 113 *Pseudomonas* species, including *P. abietaniphila, P. agarici, P. agarolyticus, P. alcaligenes, P. alcaliphila, P. alginovora, P. amygdali, P. anguilliseptica, P. andersonii, P. asplenii, P. aurantiaca, P. avellanae, P. azelaica, P. azotoformans, P. balearica, P. batumici, P. borealis, P. brassicacearum, P. brenneri, P. cannabina, P. caricapapayae, P. cichorii, P. coronafaciens, P. cedrina, P. congelans, P. corrugata, P. chloritidismutans, P. chlororaphis, P. citronellolis, P. costantinii, P. cremoricolorata, P. denitrificans, P.*

diterpeniphila, P. extremorientalis, P. flavescens, P. ficuserectae, P. filiscindens, P. fluorescens, P. fragi, P. frederiksbergensis, P. fulgida, P. fulva, P. fuscovaginae, P. gessardii, P. gingeri, P. graminis, P. grimontii, P. halodenitrificans, P. halophila, P. hibiscicola, P. hydrogenovora, P. indica, P. japonica, P. jessenii, P. jinjuensis, P. kilonensis, P. koreensis, P. libanensis, P. lini, P. lundensis, P. lurida, P. lutea, P. luteola, P. mandelii, P. marginalis, P. mediterranea, P. meliae, P. migulae, P. mucidolens, P. marginata, P. meridiana, P. mendocina, P. monteilii, P. mosselii, P. nitroreducens, P. oleovorans, P. orientalis, P. oryzihabitans, P. pseudoalcaligenes, P. palleroniana, P. parafulva, P. pavonanceae, P. pertucinogena, P. proteolytica, P. psychrophila, P. resinovorans, P. poae, P. plecoglossicida, P. putida, P. rathonis, P. reactans, P. rhizosphaerae, P. rhodesiae, P. salomonii, P. stutzeri, P. syringae, P. savastanoi, P. straminea, P. synxantha, P. tolaasii, P. trivialis, P. tremae, P. taetrolens, P. thermaerum, P. thermocarboxydovorans, P. thermotolerans, P. thivervalensis, P. umsongensis, P. vancouverensis, P. veronii, P. viridiflava, P. wisconsinensis, and *P. xiamenensis.* The instant specification only describes two nucleic acids encoding hypersensitive response elicitors from two species.

There are at least 68 *Xanthomonas* species, including *X. albilineans, X. arboricola, X. axonopodis, X. bromi, X. campestris, X. cassavae, X. citri, X. codiaei, X. cucurbitae, X. cynarae, X. fragariae, X. gardneri, X. hortorum, X. hyacinthi, X. melonis, X. oryzae, X. pisi, X. populi, X. sacchari, X. theicola, X. translucens, X. vasicola,* and *X. vesicatoria.* The instant specification only describes two non-full-length fragments of hypersensitive response elicitors from one species and describes no nucleic acids encoding full-length hypersensitive response elicitors from any *Xanthomonas* species.

As the majority of these species would produce at least one hypersensitive response elicitors, it is clear that the genus of nucleic acids encoding hypersensitive response elicitors within the recited genera is not fully described, and the entire genus of nucleic acids encoding hypersensitive response elicitors from any bacteria or fungus is not described. Thus, the instant specification fails to describe nucleic acids encoding hypersensitive response elicitors within the full scope of the claims, and thus fails to describe methods of using those nucleic acids.

Not only is written description lacking for nucleic acids encoding hypersensitive response elicitors within the full scope of the species within the claims, as discussed above, the existence of DspE, DspF and HrpW demonstrates that even within a single species, description of only one such nucleic acid fails to describe nucleic acids encoding hypersensitive response elicitors within the full scope of the claims.

Applicant urges that $harpin_{Ea}$ is a representative species belonging to an art-recognized class of hypersensitive response elicitors and that results achieved with one member have proven to be similarly achieved with other members of the class (response pg 5).

This is not found persuasive because the specification does not describe nucleic acids within the full scope of the claims.

9. Claims 38-44 and 46-51 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method of enhancing growth in plants by growing a plant or seed that has been transformed with a nucleic acid that encodes SEQ ID NOs:2, 4, 6 or 8, does not reasonably provide enablement for a method of enhancing growth in plants by growing a plant or seed that has been transformed with a nucleic acid encoding other hypersensitive response elicitors from *E. chrysanthemi*, *E. amylovora*, *P. solanacearum* or *P.*

syringaes or nucleic acids encoding hypersensitive response elicitors from *Xanthomonas campestris* or from any other *Erwinia, Xanthomonas* or *Pseudomonas* species. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims. The rejection is repeated for the reasons of record as set forth in the Office action mailed 17 December 2002, as applied to claims 38-39, 41 and 46-50. Applicant's arguments filed 16 January 2003 have been fully considered but they are not persuasive.

The claims are broadly drawn to methods of using nucleic acids encoding hypersensitive response elicitors to enhance plant growth.

The instant specification, however, only provides guidance for nucleic acids encoding a hypersensitive response elicitor of SEQ ID NOs:2, 4, 6 and 8 from each of *E. chrysanthemi*, *E. amylovora*, *P. syringaes* and *P. solanacearum*, respectively.

The instant specification fails to provide guidance for nucleic acids encoding hypersensitive response elicitors within the full scope of the claims. The specification does not teach any nucleic acid encoding other hypersensitive response elicitors from *E. chrysanthemi*, *E. amylovora*, *P. solanacearum* or *P. syringaes* or nucleic acids encoding hypersensitive response elicitors from *Xanthomonas campestris* or from any other *Erwinia, Xanthomonas* or *Pseudomonas* species.

The specification does not provide guidance for other nucleic acids encoding hypersensitive response elicitors from *E. chrysanthemi*, *E. amylovora*, *P. syringaes* and *P. solanacearum*. For example, in *E. amylovora* there are at least 3 other nucleic acids encoding

hypersensitive response elicitors: HrpW (Kim et al, 1998, J. Bacteriol. 180:5203-5210), dspE and dspF (Bogdanove et al, 2001, US Patent 6:228,644).

Given the claim breath and lack of guidance in the specification as discussed above, the instant invention is not enabled throughout the full scope of the claims.

Applicant urges that The Wei Declaration of 27 September 2002 shows that Arabidopsis and cotton plants transformed with a nucleic acid encoding HrpN from *E. amylovora* grew at a greater rate than wild-type plants and that topical application of hypersensitive response elicitors from other bacteria genera enhanced the growth of tomato; thus, hypersensitive response elicitors from a range of sources have the ability to enhance plant growth and one of skill in the art would expect that results achieved with one member of this art-recognized class would be predicative of success with other members (response pg 6).

This is not found persuasive because the rejection is not that nucleic acids encoding hypersensitive response elicitors would not enhance plant growth when transformed into a plant, but that nucleic acids encoding hypersensitive response elicitors are not taught within the full scope of the claims.

Applicant urges that the specification teaches four nucleic acids encoding hypersensitive response elicitors (response pg 6).

This is not found persuasive. As discussed above, there are at least 12 *Erwinia* species, 113 *Pseudomonas* species, and 68 *Xanthomonas* species. The specification only teaches a single nucleic acid encoding a hypersensitive response elicitor from each of two *Erwinia* and two *Pseudomonas* species. The specification teaches no nucleic acids encoding a hypersensitive

response elicitors from any *Xanthomonas* species. Nucleic acids encoding hypersensitive response elicitors are not taught within the full scope of the claims.

10. Claims 39-44 and 51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention. Dependent claims are included in all rejections.

Claims 39-40 and 42-44 are indefinite in their recitation of "polypeptide or protein corresponds to that derived from" in line 2. It is unclear how the derived protein differs from the original and it is unclear what it means for a protein to "correspond" to another.

Claim 41 is indefinite in their recitation of "polypeptide or protein derived from" in line 2. t is unclear how the derived protein differs from the original.

Claim 51 lacks antecedent basis for the limitation "the propagated plants" in lines 2-3. Additionally, "plant" in line 3 should be plural.

Conclusion

11. No claim is allowed.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anne R. Kubelik, whose telephone number is (571) 272-0801. The examiner can normally be reached Monday through Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Nelson, can be reached at (571) 272-0804. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to Customer Service at (703) 308-0198.

Anne R. Kubelik, Ph.D.
February 10, 2004

ANNE KUBELIK
PATENT EXAMINER